

Rendezvous at Promontory: A New Look at the Golden Spike Ceremony

This lesson plan, made available by the Utah State Historical Society, is designed to involve teachers, students, and parents in using the *Utah Historical Quarterly* to learn more about local, state and the nation's history.

Few events in American history are as seemingly well known as the Golden Spike ceremony, yet few events are as clouded by myth, misinformation and contradictory source material. Almost a half-century later it seems proper to take another look at this historic event. This lesson plan revisits the historic event and sorts truth from myth using primary source material. Along the way many interesting events are revealed such as the original celebration set for May 8 was delayed to May 10 because two officials of the Union Pacific Railroad were held hostage by hundreds of angry workers until their demands for months of unpaid work were satisfied.

Curriculum Ties:

Social Studies, United States History II, Standard 2, Objective 1

Social Studies, United States History I, Standard 7, Objective 3 and Standard 10, Objective 1

Social Studies, Utah Studies, Level 7, Standard 4, Objective 3

Social Studies, Utah Studies, Level 4, Standard 1, Objectives 1 and 2

Time Frame:

Activity 1: 30-60 minutes depending on discussion time

Activity 2: several class periods

Activity 3: 60+ minutes so historic photographs can be appreciated

Activity 4: 30 minutes once they understand events that led to driving the Golden Spike

Activity 5: 30-60 minutes depending on discussion time

Group Size: Any class size (Activity 2 could be done by individuals or groups)

Enduring Understanding:

- The transcontinental railroad was a significant and transforming event in American history.
- Many people contributed in many different ways to accomplish this incredible feat.

Essential Questions:

1. How were different groups of people affected by the transcontinental railroad?
2. Who initially promoted and helped get the transcontinental railroad project going?
3. Who was instrumental in building the transcontinental railroad and should be recognized in history as having helped build the greatest engineering achievement of the American people in the Nineteenth Century?
4. In what ways did the railroad impact Utah? [Stimulates economy (mining); expands railroad in Utah; increases diversity; establishment of Salt Lake Tribune follows; Protestant church groups send in missionaries/teachers and education in Utah improves;

Mormon missionary efforts made easier as converts can travel by rail; statehood likely delayed until fundamental issues on polygamy and church/state resolved; and Z.C.M.I. cooperative movement (United Order).]

Materials:

- *Utah Historical Quarterly (UHQ)* article: “Rendezvous at Promontory: A New Look at the Golden Spike Ceremony” by Michael W. Johnson, Winter 2004, Volume 72, Number 1 (available on Utah State Historical Society (USHS) web site at: <http://history.utah.gov/education/uhqlessons.html>)
- Enhancement items, such as photographs, listed as available on “USHS web site” located at: <http://history.utah.gov/education/uhqlessons.html>
- “Building the Transcontinental Railroad” synopsis in this lesson plan
- “Where Are They Now?” piece in this lesson plan
- “Short Stories About the Transcontinental Railroad” piece in this lesson plan
- “Railroad Trivia” piece in this lesson plan
- Reproduction of the *UHQ* article for educational purposes permission granted

Additional Useful Materials:

- *Nothing Like It in the World, The Men Who Built the Transcontinental Railroad 1863-1869*, Ambrose, Stephen E., Simon & Schuster, Rockefeller Center, New York, New York.
- Golden Spike National Historic Site web site: <http://www.nps.gov/gosp>
- *Great Basin Kingdom: An Economic History of the Latter-day Saints 1830-1900*, Arrington, Leonard J., University of Utah Press, Salt Lake City, Utah.
- Central Pacific Railroad Photographic History Museum web site: <http://cpr.org>

Background for Teachers:

- Read “Rendezvous at Promontory: A New Look at the Golden Spike Ceremony” by Michael W. Johnson, *Utah Historical Quarterly*, Winter 2004, Volume 72, Number 1 (available on USHS web site at: <http://history.utah.gov/education/uhqlessons.html>).
- Be familiar with “Rendezvous at Promontory” enhancement materials on USHS web site at: <http://history.utah.gov/education/uhqlessons.html>

Student Prior Knowledge:

The transcontinental railroad was completed in the late 1860s and the concept that many people and America were transformed because of this event.

Intended Learning Outcomes:

The significance of the transcontinental railroad, the people who made this happen and how they contributed.

Instructional Procedures:

Using the “Golden Spike Ceremony” to study the completion of the transcontinental railroad is a different approach but works well as it gives students a different perspective. Activities 1 helps students see how different groups of people were affected by the transcontinental railroad. Activities 2 and 3 provide active participation in solving the problem of a poorly planned ceremony for one of America’s greatest events. Activity 4 is an interesting look at adults behaving badly and gives the students an opportunity to settle a dispute. Activity 5 reinforces the concept that the transcontinental railroad brought big changes for America.

Activity 1: The Nation’s Reactions

The United States was exuberant as the construction of the transcontinental railroad drew to a close in the spring of 1869. The transcontinental railroad was called the “Eighth Wonder of the World.” Building the railroad was compared to the voyage of Columbus or the landing of the Pilgrims. They may have exaggerated, but for the people of 1869, especially those over 40 years old, there was nothing to compare to it. A person born in 1829 or earlier was in a world in which President Andrew Jackson traveled no faster than Julius Caesar, a world in which no thought or information could be transmitted any faster than in Alexander the Great’s time. In 1869 with the railroad and the telegraph that was beside it, a man could move at 60 miles per hour and transmit an idea from coast to coast almost instantly. The completion of the transcontinental railroad meant different things to different people of the country. This activity investigates these reactions.

Step 1: Ask students to imagine they are living in America as the transcontinental railroad is completed. Explain that this event touched emotions deep in the American character, but it also meant different things to different people. Tell them they are going to look at this event from different perspectives. Students could write their feelings individually and then their thoughts could be shared and discussed as a class. On the board write the different groups they are going to look at and ask students to think how they would feel if they were:

- 1) An ordinary citizen? [Possible answers: 1) A sign of the nation’s greatness, it was thought to be the grandest industrial accomplishment of the age as nowhere else on earth had such a railroad been built. In a time when the U.S. sometimes felt inferior to European nations the completion of the transcontinental railroad signaled to the world that the Americans were a great and capable people. 2) Ideas of national unity, only a few years before, the building of the railroad had begun in the midst of the Civil War (1863) where untold treasure and some 600,000 lives had been spent to reunify the country. The transcontinental railroad was an accomplishment of the entire nation. 3) Manifest destiny, easier to populate the continent. 4) Mastery of nature. 5) Extraordinary technical ability, the technical obstacles in crossing the high mountains and vast deserts was enormous and the logistical problems of building a railroad in a wilderness were staggering – that the line was finished years ahead of schedule added to the triumph.]
- 2) A citizen in the Far West? [Possible answers: 1) Years of intense isolation from families and countrymen was about to end - remind students that when people moved far away from their families it often meant they probably would never see them again. 2) Could

import bulky manufactured goods at less cost and ship agricultural products to market. Westerners were profoundly affected, in fact, most of the planning and inspiration for the ceremony came from Californians. 3) After enduring great hardship and pioneering a new country this brought fulfillment of a vision and the beginning of a new and better era. (The Civil War had ended just four years earlier.)]

- 3) A citizen in the East? [Possible answers: 1) Excitement. 2) Ability to see family and friends who had moved to the Far West. 3) Chance to see the rest of the United States, places they had only heard about or perhaps seen pictures of.]
- 4) A business person? [Possible answers: Ability to profit monetarily by shipping and selling merchandise across the nation; the notion of trade with China, Japan and other countries.]
- 5) A Native American? (To help students with this imagery show photograph of Native American looking at railroad track in late 1868. Photograph available at USHS web site "Native American and the Railroad, 1868") [Possible answers: Sadness, foreseeing more encroachment of white settlers onto their land, and loss of their way of life. The Indians of the Great Plains, particularly the Sioux and Cheyenne, despised the iron rail and wanted those associated with it, the farmers following it and the travelers who were sure to come on it, out of their country. It had split the Great Plains buffalo herd into two parts because buffalo would not cross the tracks. It meant doom for the Indian's way of life. They could no longer be free and independent living off the buffalo herds. They could either live on reservations cared for by the white man or get killed. General John Pope observed, "The Indian, in truth, no longer has a country. He is reduced to starvation or to warring to the death. The Indian's first demand is that the white man shall not drive off his game and dispossess him of his lands. How can we promise this unless we prohibit emigration and settlement?...The end is sure and dreadful to contemplate."
- 6) Another country? [Possible answers: 1) Impressed with America's technical ability. 2) See America as a united nation after their Civil War. 3) Foresee possibility of more trade with America. 4) Concern about the rise of the United States as an industrial and military power.]

Activity 2: How shall we celebrate this incredible event?

As this *Utah Historical Quarterly* article reports, the joining of the rails ceremony was not very remarkable and most would say poorly planned and executed. It begs the question, what could/should the ceremony have been? This activity has students explore this idea based on their comprehension of who, what, where, why and how the transcontinental railroad was accomplished. With the students knowledge of the major aspects and players involved they should be able to create a ceremony worthy of the event. Show students the rubric for this activity noting the importance of explaining why certain people, activities and items were included. This could be done on an individual basis or as group projects. A presentation of the ceremonies created would be a wonderful conclusion to the project. A synopsis of this historic

event and the major contributors is at the end of this lesson plan “Building the Transcontinental Railroad” and should be used in conjunction with the textbook.

The students could read the *UHQ* article on what really happened at the Golden Spike Ceremony either before or after they create their ceremonies. *UHQ* pages 53-64 deal with the actual ceremony, with more information in the rest of this article. The students will find pages 53-55 particularly interesting as they tell how the Union Pacific dignitaries were held hostage by unpaid workers and how the cities of Sacramento and San Francisco went ahead with their celebrations on May 8. The original date set for the ceremony was May 8, but due to the hostage situation the ceremony at Promontory was delayed until May 10.

Suggested rubric for Golden Spike Ceremony activity:

	Excellent	Good	Satisfactory	Needs Improvement
Subject Knowledge	Subject knowledge is evident throughout the project. All information is clear, appropriate and correct.	Subject knowledge is evident in much of the project. Most information is clear, appropriate and correct.	Some subject knowledge is evident, some information is confusing, incorrect or flawed.	Subject knowledge is not evident. Information is confusing, incorrect or flawed.
Ceremony Elements	Ceremony incorporates all major contributors and reasons why they were included; incorporates activities and reasons why they were included; incorporates creation of memorabilia (plaques, markers, etc.) and significance of them; includes where ceremony took place and why. Extra idea(s) created.	Ceremony incorporates most major contributors and reasons why they were included; incorporates activities and reasons why they were included; incorporates creation of memorabilia (plaques, markers, etc.) and significance of them; includes where ceremony took place and why.	Ceremony incorporates some major contributors and reasons why they were included; incorporates activities and reasons why they were included; incorporates creation of memorabilia (plaques, markers, etc.) and significance of them; includes where ceremony took place and why.	Ceremony incorporates a few major contributors but no reasons why they were included; incorporates activities but no reasons why they were included; incorporates creation of memorabilia (plaques, markers, etc.) but not significance of them; includes where ceremony took place but not why.
Originality	Ceremony shows significant evidence of originality and inventiveness. The majority of ideas are fresh, original and inventive.	Ceremony shows some evidence of originality and inventiveness.	Ceremony shows an extensive collection and rehash of other people's ideas. There is little evidence of new thought or inventiveness.	Ceremony is a minimal collection or rehash of other people's ideas. There is no evidence of new thought.
Presentation	Knowledge of subject conveyed to audience in an engaging way. Reasons for all ceremony activities explained clearly.	Knowledge of subject conveyed to audience in an engaging way. Reasons for all ceremony activities explained.	Knowledge of subject conveyed to audience in an informative way. Reasons for some ceremony activities explained.	Knowledge of subject not conveyed to audience. Reasons for ceremony activities not explained.
Working in Group	Student works toward the attainment of successful campaign without being asked. Works to include all students in group in campaign.	Student works toward the attainment of successful campaign doing what is needed willingly when asked.	Student works toward the attainment of successful campaign only when required and needs strong urging.	Student doesn't work toward attainment of successful campaign despite repeated urging.

Activity 3: What Photographs to Take?

One of the few great decisions for the celebration made ahead of time was to have photographers Alfred Hart, Andrew J. Russell and Charles Savage roam free and take whatever pictures they liked. They could order men to get into poses, to stand still and do all the other things that modern men are accustomed to doing for photographers. Thanks to that arrangement, some of the most famous photographs in American history were taken. Ask students “If you were a photographer at this celebration what pictures would you take? Why?” Following this discussion show students photographs actually taken at the Golden Spike Ceremony by these three photographers. (USHS web site “Golden Spike Ceremony Photographs” and “Photographers of the Transcontinental Railroad”)

Activity 4: Who Drives the Golden Spike?

Many celebration decisions had to be improvised the day of the celebration. Union Pacific’s Grenville Dodge and Central Pacific’s Edgar Mills argued for nearly an hour right before the scheduled beginning of the ceremony about who should have the honor of driving the Golden Spike. The Central Pacific officials declared that, since Leland Stanford had tossed the first shovelful of dirt in the construction of the railroad and the Central Pacific had been incorporated earlier than the Union Pacific, Stanford was the man to drive the last spike. Union Pacific’s Dodge said Doc Durant should do it because the Union Pacific was the longer railroad and threatened to withdraw from the ceremony. Just a few minutes before the ceremony was to start the controversy was settled. Ask the students if they were in charge of deciding who should drive the Golden Spike, what decision would they make? Why?

The decision made that day was to have a last spike for each railroad and have both Central Pacific’s Leland Stanford and Union Pacific’s Thomas “Doc” Durant hit the spikes at the same time. There were two gold spikes. Stanford was presented the first gold spike, which was donated by David Hewes, Mrs. Jane Stanford’s brother-in-law. Mr. Hewes did more than any other person to plan the ceremony.

The “Hewes” spike was made the size of common railroad spike, 6 inches long with a rough gold nugget attached to its point, weighed 14.13 ounces, 13.377 ounces approximate gold and 17.6 carats fine. The spike was engraved on all four sides. On one side was engraved, “May God continue the unity of our Country as the Railroad unites the two great Oceans of the world.” Another side read, “The Pacific Railroad ground broken Jan 8th 1863 and completed May 8th 1869.” The remaining two sides were engraved with officers of the Central Pacific on one and the railroad’s directors on the other (most of whom were the same persons). On the top of the spike were the words “The Last Spike.” (USHS web site “Hewes Gold Spike” and “Gold Spikes”)

The second gold spike, which was inspired by the Hewes spike, was commissioned by Frank Marriott, publisher of the San Francisco *News Letter*. Marriott also presented his gold spike to Leland Stanford. This second spike was described as about five inches long and 9½ ounces in weight with a rough gold nugget attached to its point. It had only one inscription, “With this spike the San Francisco *News Letter* offers its homage to the great work which has joined the

Atlantic and Pacific Oceans. This month – May, 1869.” Central Pacific’s Stanford appears to have gotten the highly decorated Hewes spike and Durant likely the second Marriott spike. (USHS web site “Gold Spikes”)

Activity 5: What Changes Did the Transcontinental Railroad Bring?

Ask students to think what changes the transcontinental railroad would have brought and write their answers on the board. Have a discussion with their answers and work into the discussion these interesting facts:

First sign of changes: Before the tracks were joined, increasingly emigrants were moving west by rail rather than wagon trains. Immigrants who had traveled from Omaha to Ogden on the Union Pacific hired stagecoaches at the terminus and took them to Monument Point, then got on a Central Pacific train and were in California a little over a week after leaving Omaha. Wells Fargo stagecoaches, which had once spanned the continent, now provided service between railheads, their run became shorter with each passing day.

Changes railroad brought: Of all the things done by the first transcontinental railroad nothing exceeds the cuts in time and cost it made for people traveling across the continent. Before the railroad it took a person months and might cost more than \$1,000 to go from New York to San Francisco. Less than a week after the pounding of the Golden Spike a person could go from New York to San Francisco in 7 days. So fast they used to say, “that you don’t even have time to take a bath.” The listed prices for the summer of 1869 from New York to San Francisco was \$150 for first class, \$70 for emigrants. By June 1870 it was \$136 for first class, \$110 for second class and \$65 for third or emigrant class. First class meant a Pullman sleeping car, emigrants sat on a bench. (USHS web site “Early Central Pacific Passenger Car” “Union Pacific Pullman Car interior” “Union Pacific Railroad Pass” and “Union Pacific Promotion Poster”)

Freight rates by train were incredibly less than for ox or horse drawn wagons, sailboats or steamers.

Mail that once cost dollars per ounce and took a long time to be delivered now cost pennies and got from Chicago to California in a few days.

The telegraph (which ran beside the railroad) could move news, ideas, thoughts, and any words or numbers that could be put on paper from one place to another almost instantly. This included Europe, England or anywhere else that had a telegraph station. (USHS website “Telegraph and Railroad”)

Together the transcontinental railroad and the telegraph made modern America possible. Things that could not have been imagined before the Civil War became common: a nationwide stock market; a continent-wide economy where people, agricultural products, coal and minerals moved wherever someone wanted to send them and did so cheaply and quickly. A continent-wide culture in which mail, popular magazines and books that used to cost dollars per ounce and took forever to get from the East to the West Coast, now cost pennies and got there in a few days. Entertainers could move from one city to another in a matter of hours.

Additional discussion or essay topics:

1. Ask students what generation they think lived through the greatest change? [Possible answers: people who lived through the coming of the automobile and the airplane; beginning of modern medicine; invention and first use of the atomic bomb; the computer with Internet and E-mail; or Americans who lived through the second half of the 19th century who saw slavery abolished and electricity put to use, the development of the telephone and the completion of the telegraph and most of all, the railroad.]

2. Correspondence between Mark Hopkins and Collis Huntington of the Central Pacific was handwritten, long voluminous letters full of detail. They had no other means of communicating except by telegraph, which cost so much per word they thought it outrageous and refused whenever possible to use it, or by conference, nearly impossible when they were on different coasts. So they wrote handsome letters, quite legible, well written, covering all the points. In the middle part of the nineteenth century before the typewriter and the telephone, businessmen did so as a matter of course. So did politicians, doctors, lawyers, schoolteachers, generals, enlisted men, housewives and nearly everyone. Discuss how we have a record of this history because it was written down and compare it to now with the telephone and e-mails where there really isn't a trail left behind. Ask the students what could be some of the consequences of today's communication methods.

Extensions

Rough towns: Temporary towns built where railroad work was going on were called "Hell on Wheels" towns and were extremely wild. Whiskey sellers, gamblers and prostitutes did business in these towns. At Promontory Charles R Savage, a photographer hired for the joining of the rails, saw the tent camps and was informed of how dangerous the camps were: 24 men had been killed in the several camps in the last 25 days.

In the gambling tents the games included three-card monte, ten-die, strap game, chuck-a-luck, faro and keno. Have students find the rules of these games and perhaps actually play them.

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Building the Transcontinental Railroad

Building the first transcontinental railroad rates as the greatest engineering achievement of the American people in the Nineteenth Century. Along with the building of the Panama Canal and landing the first men on the moon, the construction of a transcontinental railroad was one of the United States' greatest technological achievements.

Before the transcontinental railroad was completed, there were basically three ways to get to the west coast. One was to travel overland by stagecoach or covered wagon, which took months and involved crossing rugged mountains and arid desert. The other two alternatives involved travel by sea either around the tip of South America, a distance of 18,000 miles, or to cross the Isthmus of Panama, then travel north by ship to California. Each of these two routes took months and were dangerous and expensive. The transcontinental railroad would make it possible to complete the trip in five days at a cost of \$150 for a first-class sleeper.

It was built without steam shovels, pile drivers or power saws. It was built without pipes with water running through them, without hospitals, with no internal-combustion engine trucks and front-end loaders to move materials, or much of anything else commonplace in the twentieth century to build a railroad. The line had nearly 2,000 miles to cross, with great stretches of desert where there was no water, plus vast areas without trees for ties or bridges, stones for footings or game for food. Over most of the route there were no cities except Salt Lake City, no settlements, no farms, no roundhouses, no water pumps. (USHS web site "Amazing Railroad Construction Photographs" and "Transcontinental Railroad Map")

It could not have been done without teamwork and that team included: a democratic political system, skilled and ambitious engineers, bosses and foremen who had learned how to organize and lead men as officers in the Civil War, hardworking laborers who had learned how to take orders in the war, thousands of Chinese who came to America seeking a fortune, laborers from every inhabited continent, trees and iron available in America, capitalists willing to take high risks for great profit, and men willing to challenge all, at every level, in order to win all. At its peak it was almost the size of the Civil War armies with about 15,000 working on each line. Nearly everyone involved in building the railroad later commented that it could not have been done without the Civil War veterans and their experience.

Both companies faced similar problems. Nearly everything each line needed like locomotives, rails, spikes and much more had to be shipped from the East Coast. For the Central Pacific that meant transporting the material through Panama or around South America. For the Union Pacific it meant across the Eastern United States, then over the Missouri River, with no bridges, then out to the construction site. For much of the route, even water had to be shipped along with lumber. The costs were astounding. Except for Salt Lake City, there were no white settlements through which the lines were built. The Union Pacific had problems with the Indians who had not been asked or consented or even paid for the use of what they regarded as their lands. For the Central Pacific there was the problem of digging tunnels through mountains made of granite. There were shortages on both sides.

It was started during the Civil War. The first spikes were driven in 1863, in the midst of the Civil War.

The government was the only one that had the resources, money and land that could also finance the project. No corporation or bank was big enough.

The leaders of this feat were the big men of the century.

Abraham Lincoln was the driving force of the transcontinental railroad. A year before he was elected president of the U.S. Lincoln, then a great railroad lawyer, met with 28 year-old railroad engineer Grenville Dodge in Council Bluffs, Iowa on August 13, 1859. Lincoln asked Dodge what would be the best route for a railroad to the West and why. Dodge replied with great expertise having worked on private surveys on the best route to the West. With help from many others, Dodge and Lincoln inaugurated the greatest building project of the nineteenth century. Lincoln made it clear to congressmen that despite the Civil War going on, he was for passing the Pacific Railroad Bill and wanted it started right away “not only as a military necessity, but as a means of holding the Pacific Coast to the Union.” After the bill passed both House and Senate he signed it July 1, 1862. (USHS web site “Lincoln’s First Meeting With Dodge, 1859”)

U.S. Army: The railroad was built, in part, because General Sherman and his army wanted it. Everyone would save time and benefit from its completion, but none more directly than the army. In its task of protecting the frontier and the Far West the army had sent its units on exhausting marches, sometimes as much as several months, just to get to a new post. The expense was terrific, the pain considerable. (USHS web site “U.S. Army”)

Workers: It could not have been done without the workers. They came from Ireland, China, Germany, England, Central America, Africa and elsewhere. They were latter-day Lewis and Clark types, out in the wilderness, attacked by Indians, living off buffalo, deer, elk, antelope and ducks. Their main characteristic was how hard they worked. Work in the mid-nineteenth century was different from work at the beginning of the twenty-first century. Nearly everything was done by muscle power. The transcontinental railroad was the last great building project to be done mostly by hand. The dirt excavated for cuts through ridges was removed one handheld cart at a time. The dirt for filling a dip or a gorge in the ground was brought in by handcart. Some of the fills were enormous, hundreds of feet high and a quarter mile or more in length. Black powder was used to blast for tunnels, but only after handheld drills and sledgehammers had made an indentation deep enough to pack the powder. Making the grade, laying the ties, laying the rails, spiking in the rails, and everything else involved in building the road was backbreaking.

Surveyors: They had miles to cover over every kind of terrain. They had no airplanes to provide them with a view from above. For most of the route there were no maps to indicate lakes, rivers, and the shape of the mountains or to indicate settlements other than Salt Lake City. Despite these handicaps, the original surveyors and the surveyors who followed to make the line for the graders, did a grand job. Nearly a full century later in the 1950s and 1960s, when the surveyors laid out a line for Interstate 80, flying in airplanes and helicopters and equipped with modern implements and maps, they followed almost exactly the route laid out by the original surveyors.

Travelers in the twenty-first century driving on I-80 are nearly always in sight of the original tracks. (USHS web site “Union Pacific Railroad survey crew”)

The two biggest corporations of its time were the Union Pacific (UP) and the Central Pacific (CP). It took imagination, brains, guts, hard work and a willingness to experiment with new methods to organize and run them properly. The government set it up as a race. The company that built more would get more. The UP and CP and all those involved with it from the directors, superintendents, surveyors, engineers, foremen, grade makers, rail layers, ballast men, cooks, telegraph builders and operators, and everyone else connected to the railroad would do whatever winning required.

The Union Pacific Railroad:

Grenville Dodge, a Civil War Union general, was the chief engineer of the Union Pacific and could be called America’s greatest railroad-builder. In 1858, a year before he was elected president of the U.S., Abraham Lincoln met with 28 year-old railroad engineer Dodge in Iowa. Lincoln asked Dodge what would be the best route for a railroad to the West and why. Dodge replied with great expertise having worked on private surveys. Dodge worked hard with other railroad men and Iowa delegates to get Lincoln the Republican nomination for President in Illinois. They stressed that with Lincoln they would have a president whose program would include building the Pacific Railroad through Iowa and Illinois. Two weeks after Lincoln was inaugurated, Dodge met with Lincoln to press for the railroad. Lincoln was preoccupied with the coming of the Civil War but he and Dodge agreed on all but one point. About a month later the Civil War started.

Dodge put the railroad aside and joined the army. During the war he built new railroads, bridges and repaired old railroads, impressing General Grant with his ability. Dodge talked with Lincoln in the spring of 1863 and told him why he felt Omaha was best place for eastern terminus of the Union Pacific (Lincoln had the responsibility for deciding the route). With help from many others, Dodge and Lincoln inaugurated the greatest building project of the nineteenth century. Thomas “Doc” Durant was determined to lure Dodge away from the army to help with the railroad. Finally Dodge agreed to be chief engineer of the Union Pacific if he was given absolute control because he had learned in the military that a divided command would never work. Durant agreed and asked General Sherman for Dodge’s leave of absence to work on the railroad. General Sherman agreed. Dodge put the working end of the UP on a military basis. Nearly all his chief subordinates and most of his graders and track layers had had been in the Union Army. There were thousands of them. Military discipline came naturally to them, without the military organization it is doubtful that the UP could have been built because they had farther to go than the Central Pacific, met with hostile Indians, had shortages and met with the nonexistence of timber, water and other necessities. (USHS web site “Grenville Dodge”)

Thomas “Doc” Durant was a Wall Street speculator, who bought 20 shares of the first open railroad stock subscriptions. He was elected vice-president of Union Pacific after the original commissioners were discharged. He, not the UP president John A. Dix, was the real leader of the UP Corporation. He was into the railroad business to make money, not build a railroad. He was flamboyant and known as the most freewheeling man on Wall Street, he would bet a fortune on

almost anything. Durant had worked a deal with Herbert “Hub” Hoxie, an Iowa politician to inflate the price of building the railroad for more profits. In 1866 Durant realized he needed to establish a solid organization, one with forceful, trustworthy and capable men to run the company, men far better than the ones he had already hired. He did this in many cases, but his best choice was finally getting General Grenville Dodge as chief engineer. Most of the men he hired had been participants in the war and military discipline came naturally to them. (USHS web site “Thomas (Doc) Durant”)

Representative Oakes Ames, owner (along with his brother Oliver) of the Ames Shovel Factory, the biggest and best shovel factory in the country. Lincoln called him into his office in January 20, 1865 and told him if the money provided is not enough to build the railroad, ask for double and he would have it. “The road must be built, and you are the man to do it,” said Lincoln. Representative Ames loaned Union Pacific \$600,000. (USHS web site “Oakes Ames”)

Oliver Ames, older brother of Representative Oakes Ames and fellow owner (along with his brother Oakes) of the Ames Shovel Factory, the biggest and best shovel factory in the country. Made a \$200,000 loan to Huntington in 1862 to help the Central Pacific. In 1866 was elected temporary president of the UP when General Dix took a leave of absence as UP president to serve as minister to France. (USHS web site “Oliver Ames”)

Peter A. Dey, along with Grenville Dodge, undertook the first survey of a railroad across the state of Iowa. From 1863-1865 Dey directed surveys of the road to Promontory, helped secure land for right-of-ways, ordered equipment, arranged tie contracts, raised funds for construction and served as chief engineer - until he gave his resignation from the project over disagreements with Thomas “Doc” Durant over propriety. Why he left the Union Pacific is uncertain. Some sources say he quit when asked to pad his estimates for work, from \$30,000 per mile to \$50,000. One newspaper clipping credits his resignation with instigating the investigation that brought to light the transgressions of the Crédit Mobilier which led to a huge scandal (see “Biggest Scandal of the 19th Century” in the “Short Stories About the Transcontinental Railroad” section of this lesson plan). Grenville Dodge, however, states that Dey resigned because his recommendation for how the railroad should progress west of Omaha was ignored and the road was built in defiance of government conditions. (USHS web site “Peter A. Dey”)

Brigham Young was an enthusiastic promoter from the very beginning. Young believed the railroad would benefit Utah by getting converted immigrants to Salt Lake City faster and cheaper, import manufactured goods at less cost, ship agricultural products to market, make it possible for Utah residents to visit family and friends back east, and hoped that Salt Lake City would become a major tourist center. In the middle of the Civil War, right after the Union Pacific was founded, Doc Durant communicated with Young about the best route across America. Young sent one of his sons, Joseph A. Young with a party of Mormons, to do some surveys. Young was so eager to have a railway that he paid the expenses of this survey party. The partnership with Brigham Young, the UP and CP worked because of two main factors: the lack of circulating cash money in Utah meant the Mormons needed work badly and would be paid in cash and the lack of labor in the West meant that the UP and the CP needed workers badly. “Doc” Durant knew he needed the Mormons and didn’t care what it would cost to hire them. He telegrammed Brigham Young and offered him the job along with a remarkable offer: Young

could name his price and set other conditions. Young answered “yes” within an hour after receiving the telegram. Young put ‘workers needed’ notices in two Salt Lake City newspapers and 4,000 men responded. The Union Pacific was very impressed with the Mormon workers. The Central Pacific was also impressed with the Mormon workers and wanted them to work for them. But the UP had gotten to Brigham Young first and he was loyal to his UP contract. Finally on November 9, 1868 CP’s Stanford managed to get Young to agree to a contract calling on Mormons to build from Ogden west to Monument Point. The railroad in Utah could not have been built without Durant, Dodge and many, many others but neither could it have been built without the Mormons. They worked day and night using huge piles of sagebrush to make fires so they could work at night. (USHS web site “Brigham Young” and “Mormon Workers”)

Samuel B. Reed was a surveyor for UP but Durant promoted him in 1866 to superintendent of construction and operations. He was in charge of keeping the men building the road supplied with everything from food to rails, ties, spikes, and everything else. He was also responsible for keeping the graders, barge builders, tie cutters and tunnel builders supplied. It was a tough demanding position to which he was perfectly suited. (USHS web site “Samuel B. Reed”)

John “Jack” Casement and Dan Casement, were generals during the Civil War and the heads of construction for the Union Pacific line. They were a well-known team, “Jack” being the field boss driving the tracklayers at the front while Dan took care of the paper work making sure the men were paid and supplies were available. (USHS web site “John (Jack) Casement” and “Dan Casement”)

Mayor William B. Ogden, first mayor of Chicago, Illinois and elected first president of the Union Pacific Railroad on September 2, 1862. He was a good choice for the first UP president, not only because of his railroad experience, but primarily because he was a clever man who had many political connections. Mr. Ogden was active in the initial movement that led to the construction of the Chicago and Galena railroad and with others, pledged his private fortune for its completion as far as Elgin, Illinois. In 1864 he effected the consolidation of the Chicago and Galena Railroad into the Chicago and Northwestern Railroad Company, and was made president in 1847. When he became UP’s first president, the railroad wasn’t fully funded and hadn’t yet laid a single mile of track – the railroad existed largely on paper created by an Act of Congress. (USHS web site “William B. Ogden”)

General John A. Dix was elected president of UP after original commissioners were discharged October 29, 1863. It was mostly a title only, “Doc” Durant was the real leader of the corporation. In 1866 General Dix was appointed minister to France but he did not resign as head of the UP, instead, he took a leave of absence. Durant wanted the office while General Dix was away but the board was no longer willing to let “Doc” Durant run things to suit himself. The board decided to hire a temporary president and voted between Durant and Oliver Ames, Durant received only 1 vote and Oliver Ames received 13. (USHS web site “John A. Dix”)

Irish and other workers who built the Union Pacific were there by choice and eager to participate in the amazing task of building a railroad across a wilderness. They were mainly young ex-soldiers from both the Union and Confederate armies, unmarried men who had no compelling reason to return home after the surrender at Appomattox. It is difficult to get

information on individuals in the workforce as workers didn't write many letters home, and if they did very few have been saved, and they didn't keep diaries. Collectively their portrait is clear and compelling, including who they were, how they worked, where they slept, what and how much they ate and drank, their dancing, gambling and other diversions. (USHS web site "Irish and Other Workers")

Engineers and Foremen, all Civil War veterans, who made it happen. It was the Civil War that taught them how to think big, how to organize grand projects and how to persevere. (USHS web site "Engineers and Foremen")

The Central Pacific Railroad:

Theodore D. Judah was the surveyor who rose above all the rest and earned everyone's gratitude. The Central Pacific was his idea. After graduating with a degree in engineering he was continuously engaged in planning and construction, mainly of railroads. Nearly every railroad being built in the east wanted Judah as the engineer. In 1856 he and his wife Anna made three sea voyages back to Washington to promote a transcontinental railroad under the correct assumption that only the federal government could afford to finance it. In December of 1859 he met with President James Buchanan who generally favored the idea. He and Anna then headed by rail to promote the railroad and to collect "some reliable information with regard to the operating of engines on heavy grades..." He returned to Washington, and with the help of John C. Burch, set up 'The Pacific Railroad Museum' in a room at the Capitol and promoted the railroad for six months. He didn't convince everyone, many wanted to know how the railroad was going to get across the Sierra Nevada mountains. He made up his mind that he would never go to Washington again until he had a survey so he could intelligently show senators, members of congress, etc. that it could be done. Daniel W. Strong "Doc" showed him the best route, the old emigrant road the Donner party had used which had been abandoned after the tragedy. He and "Doc" became partners in the Central Pacific Railroad Company of California. He built the first railroad in California. When he was offered the opportunity to be the Pacific Coast railroad engineer he jumped at the chance. Judah became the chief engineer and one of the directors of the Central Pacific Railroad when it first incorporated on June 28, 1861. He went back to Washington in the fall of 1861 with the completed Sierra Nevada survey, lobbied hard and on May 6, 1862 the House passed the Pacific Railroad Bill by a vote of 79 to 49. With more intense lobbying the Senate passed the bill on June 20 by a vote of 35 to 5. Lincoln signed the bill July 1, 1862.

He filed a map of the Central Pacific route he had picked which meant the federal government owned land for fifteen miles on either side of the projected route so a citizen could not buy or make a claim on this land. Judah was not part of 'Crocker and Company' run by the "Big Four," which he worried might bankrupt the Central Pacific so they would profit from the building of the railroad. Judah was so worried about this he went to New York in the fall of 1863 to bring attention to the Big Four's inability. His plan was to have Vanderbilt and others buy them out. On this trip he contracted yellow fever during his land crossing of the Isthmus of Panama (since this was before the Panama Canal was built) and died November 2, only 37 years old. Because of his extensive explorations of the Sierra Nevada, he found the mountain pass. Together with his wife Anna, he persuaded the politicians, first in California, then in Washington – that a

transcontinental railroad could be done and demanded their support. He knew the line could be built, but only with government aid. Government aid began with Lincoln. If any one man made the transcontinental railroad happen it was Theodore D. Judah. (USHS web site "Theodore Judah")

Anna Feron Judah, Theodore Judah's wife, who with Theodore persuaded the politicians first in California, then in Washington, that a transcontinental railroad could be done and demanded their support. She made three sea voyages with Theodore to Washington to help promote the transcontinental railroad and traveled with Theodore by rail to promote the railroad and collect information. She was not invited to the Golden Spike Ceremony, she stayed home alone in Greenfield, Massachusetts. Speaking about May 10, 1869 she said, "I refused myself to everyone that day. I could not talk of the common events of daily living." Coincidentally May 10 was her and Theodore's wedding anniversary. (USHS web site "Anna Feron Judah")

John C. Burch was a representative from California who supported Theodore Judah. He traveled with Judah to Washington, agreed to sponsor the Central Pacific bill in the House, helped Judah get a room in the Capitol to promote the railroad – which they turned into 'The Pacific Railroad Museum' displaying maps, diagrams surveys, reports and other data as well as Anna Judah's collection and paintings.

The "Big Four": For the Central Pacific the leaders were California's "Big Four" - Leland Stanford, Collis Huntington, Mark Hopkins and Charles Crocker. Except for a loan from the Ames brothers and a few others, they were operating on their own. Crocker sold his store for money. They wanted to build the railroad fast and at the greatest possible profit to themselves, Theodore Judah wanted to build it well and was squeezed out.

Leland Stanford listened to Theodore Judah's appeal for investors to pay for a survey across the Sierra Nevada mountains in November of 1860 and bought stock in it. Stanford became the first president of the Central Pacific and one of the directors of the Central Pacific Railroad when it first incorporated on June 28, 1861. (USHS web site "Leland Stanford")

Collis P. Huntington left a successful business he had with his brother in New York to go to California in 1849. He took merchandise with him to sell and started a store, his brother sent him goods from New York to sell. He took the much more risky route of the Panama shortcut. On board with him was John C. Fremont's wife, Jessie Benton Fremont. Her father was Senator Thomas Hart Benton of Missouri, a leading advocate of the Pacific railroad. Jessie was going to meet her explorer husband John C. Fremont who had just completed his fourth expedition through the Western continent, this one in search of a usable railroad route to the Pacific. It took them 104 days at sea to reach San Francisco from Panama. Huntington had listened to Judah's appeal for investors to pay for a survey across the Sierra Nevada Mountains in November of 1860 and bought stock in it. He became first vice-president and one of the directors of the Central Pacific Railroad when it first incorporated on June 28, 1861. (USHS web site "Collis Huntington")

Charles Crocker moved from Indiana to California in 1849 with his two brothers and four friends because of the California Gold Rush. They took the overland route, which took them

almost half a year. He became a storekeeper. Crocker listened to Judah's appeal for investors to pay for a survey across the Sierra Nevada Mountains in November of 1860 and bought stock in it. He became one of the directors when the Central Pacific Railroad first incorporated on June 28, 1861. The Big Four wanted to make big money so, just like the Union Pacific folks, set up to milk the construction. Crocker drew up a contract awarding 'Charles Crocker Contract and Finance Company' and several minor companies the right to build the first stretch of the road. The contract was for building the road as well as supplying all materials, equipment, rolling stock and buildings. He was the "boss on the spot" where construction was going on. He was the only one of the "Big Four" who thought to praise and thank the Chinese for what they had done. (USHS web site "Charles Crocker")

Mark Hopkins worked as a storekeeper and bookkeeper in New York City. When news of the discovery of gold reached him he joined with 25 others to form a mining company. Each partner invested \$500 and they bought supplies and mining equipment that none of them knew how to use. They left for San Francisco using the Cape Horn route in January 1849 and arrived in San Francisco seven months later on August 5, 1849. The partners quarreled and soon broke up. After wandering around looking for a spot to start a store, he went to Sacramento and opened one, next door to Huntington's store. Both lost their investments in the terrible fire of 1852 but both immediately rebuilt. They eventually became partners. He listened to Judah's appeal for investors to pay for a survey across the Sierra Nevada Mountains in November of 1860 and bought stock in it. Became first treasurer and one of the directors of the Central Pacific Railroad when it first incorporated on June 28, 1861. (USHS web site "Mark Hopkins")

Daniel W. Strong "Doc," showed Judah the best route over the Sierra Nevada Mountains, the old emigrant road the Donner party had used which had been abandoned after the tragedy. They became partners the night they got back from the trip to see it. He and Judah became the first partners in the Central Pacific Railroad Company of California in 1860. He became one of the directors of the Central Pacific Railroad when it first incorporated on June 28, 1861.

James Harvey Strobridge was the superintendent of construction of Central Pacific workers and under Crocker was the driving force that put the road through. He lost sight in his right eye early in the project when blasting black powder exploded in his face. Strobridge estimated that the railroad line would have cost 70% less than it did had economy been a consideration, but the line was built "without regard to any outlay that would hasten its completion." (USHS web site "James Harvey Strobridge")

Chinese: The work was done by free men who wanted to be there. This included the thousands of Chinese working for the Central Pacific. Contrary to myth, they were not brought over by the boatload to work for the railroad, most were already in California hoping to make money in the goldfields. But California law discriminated against them in every way possible, and did all it could to degrade them and deny them a decent livelihood. The Chinese were not allowed to work on the "Mother Lode," or the "tailing," they had to pay a permission tax called a "miner's tax" and a water tax. In addition, the Chinese had to pay a personal tax, a hospital tax, a school tax and a property tax, but they could not go to public school, were denied citizenship, could not vote or testify in court. If they dared to venture into a new mining area, the whites would set on them, beat them, rob them and sometimes kill them. Charles Crocker raised the idea of hiring the

Chinese to Strobridge, who was opposed. As an experiment CP hired fifty Chinese men to work for a month, they worked superbly. The CP began to hire them and before the end of 1865 there were 7,000 Chinese at work on the line, with just under 2,000 whites. The Chinese were glad to get the work. Although they were physically small, their teamwork was so exemplary that they were able to accomplish feats we are astonished at today. (USHS web site "Chinese Workers")

Samuel Skerry Montague came to California from New Hampshire to do gold mining, which didn't work out. He had taught himself location engineering and had great skill as a surveyor and railroad man. Theodore Judah hired him as an engineer in 1862. After Judah died he took Judah's place as Central Pacific's chief engineer, the position he held until his death in 1883. (USHS web site "Samuel Skerry Montague")

Lewis M. Clement, joined the Central Pacific under Judah in 1862 and was soon placed in charge of location of the road, which he worked on until its completion. When Judah died and Samuel S. Montague succeeded him, Clement continued as assistant chief engineer. His work was the railroad route up the western slope of the Sierra Nevada and down the eastern side to the Truckee River. One notable feature of his work was his location of the line around a steep mountain cliff called "Cape Horn," where the road is 1,332 feet above the American River. The final location of where a railroad will be built is made only after a number of preliminary lines have been run and cost estimates prepared. Such surveys had been made up the mountains by Judah and the general route determined. After Judah's death more complete examinations were made by additional surveys and in some important cases material changes were made. Such work was done by Clement, working under Montague, and the line was located where the road was built as it exists today. Clement continued on across Nevada and Utah. He also designed the emigrant sleeping cars that were built at the Sacramento shops. (USHS web site "Lewis M. Clement")

Ulysses S. Grant and **William T. Sherman**, who had been instrumental in holding the north/south Union together, and helped bind the east/west Pacific Union railway with their crucial decisions at critical moments. Ulysses S. Grant was president of the United States from 1868-1876, which was during the construction of the transcontinental railroad, and was one of its strongest advocates. (USHS web site "Ulysses S. Grant and William T. Sherman")

James Bailey became first secretary and one of the directors of the Central Pacific Railroad when it first incorporated on June 28, 1861. It was incorporated with Stanford as president, Huntington vice-president, Hopkins treasurer, James Bailey secretary, Judah chief engineer and with Stanford, Crocker, Bailey, Judah, Huntington, Hopkins, Strong and Charles Marsh as directors.

Charles Marsh became one of the directors when the Central Pacific Railroad first incorporated on June 28, 1861. It was incorporated with Stanford as president, Huntington vice-president, Hopkins treasurer, James Bailey secretary, Judah chief engineer and with Stanford, Crocker, Bailey, Judah, Huntington, Hopkins, Strong and Marsh as directors.

Where Are They Now?

What happened to the railroad tracks where the Golden Spike Ceremony happened? In 1942 the track of the historic 123 mile long railroad was needed for World War II salvage efforts. It was decided to have an “undriving of the Golden Spike” ceremony. So, on September 8, 1942 about 200 people gathered. This group included distinguished groups of notables from the State of Utah, the army, the navy, Daughters of Utah Pioneers, ranchers, farmers and Box Elder County folk. They arrived by automobile to participate in the historic fete. At the same site where the original lines had met in 1869, two locomotives stood face to face as they had 73 years earlier. Amid fanfare reminiscent of the famous celebration in 1869, railroad and state dignitaries pulled up a newly bronzed railroad spike. First, Utah Governor Maw raised the spike about an inch, then E. C. Schmidt, assistant to the president of the Union Pacific Railroad Company, pulled the spike another inch, followed by L. P. Hopkins, division superintendent of the Southern Pacific Railroad Company, who raised it another inch and finally the job of removing the spike fell to Everett Michaels, vice-president of the Hyman-Michaels Company (the company who had pulled up the 123 miles of historic track). Following brief remarks by Governor Maw and other dignitaries the ceremony came to an end. The most outstanding person present was Mrs. Mary Ipsen, an 85-year old grandmother. Mary Ipsen was the only person at this ceremony who had also been at the original May 10, 1869 ceremony. She was 12 years old at the original ceremony. (USHS web site “Undriving of the Golden Spike Ceremony” “Undriven Golden Spike” and “Dignitaries, Guests and Mrs. Mary Ipsen”)

The salvaged rails were received by the United States Navy and were relaid at a naval base in Hawthorne, Nevada and at the Utah Quartermaster Depot at Ogden, furnishing much needed wartime railroad tracks.

What happened to the railroad after 1869? Both roads went through major changes and expansion in the century and a third after they were built. The Union Pacific (UP) built Dodge’s longtime dream, the Oregon Short Line. The Central Pacific (CP) expanded throughout California and became a major part of the Southern Pacific Company (SP). The SP built and acquired another transcontinental line, the one Jefferson Davis had first favored, from Southern California through Arizona, New Mexico, Texas and Louisiana. By 1900 the SP had trains operating from Oregon and Utah to New Orleans. By 1950 the track stretched 14,000 miles across 12 states from the Pacific Ocean to the Gulf of Mexico and through the states bordering the Mississippi River up to Illinois. As the country turned into the 21st Century the UP remained one of the oldest and richest corporations in the world. In 1993 it acquired the Southern Pacific and named all the railroads it controlled the Union Pacific.

The Chinese: The men who built the Central Pacific were mainly Chinese. For the most part, as individuals they are lost to history. Many of them stayed with railroad work and performed incredibly on the Northern Pacific, the Great Northern, the Oregon Shortline and others. Grenville Dodge hired Chinese workers whenever he could. In nearly every western railroad town there used to be a “Chinatown.” (Find out more about the Chinese in Utah in the *Utah History Encyclopedia* at http://www.media.utah.edu/UHE/index_frame.html click on “C” then choose “Chinese.”)

The Irish: The Irishmen working for the UP found jobs on other railroads or they got work at the various mines in the West. They were also discriminated against with signs like “no dogs or Irishmen allowed,” but not as much as the Chinese were. They and their children, grandchildren and the generations that followed went on to participate fully and actively and with success in American life.

Other employees: The firemen, brakemen, engineers, conductors, mechanics, welders, carpenters, repair-shop men, clerical force, foremen, directors, supervisors and everyone else who worked for either the UP or CP stayed with railroads. Their children did too, followed by the third generation and beyond. More than in most professions, railroading is something a family is proud of and wants to remain a part of.

The Union Pacific:

Grenville Dodge rightly gets most of the credit for building the Union Pacific railway. In January of 1870 he resigned as chief engineer of the UP and soon became chief engineer of the Texas and Pacific Railway, which collapsed in the Panic of 1873. He then joined Jay Gould in developing railroads in the Southwest. During the next 10 years he was associated with building nearly 9,000 miles of railroad. After the war with Spain, he was a partner in the Cuba Railroad Company and helped build the line from Santa Clara to Santiago in Cuba. His surveys alone totaled over 60,000 miles. Not many men in his lifetime spent so many nights sleeping on the ground. In his retirement he was active in patriotic organizations. He was the richest man in Iowa but his fortune was nothing like the fortunes of the Big Four. He lived in a grand but modest Victorian house in Council Bluffs, Iowa. He died in 1916.

Thomas “Doc” Durant got involved in the UP not to become famous but to make money. More than anyone else on the line he is associated with getting it built fast. He insisted on speed in everything and worked hard at it constantly from 1864 to 1869. He once said he did not remove his clothes for a week. He was the one who had the honor of tapping in the Golden Spike for the Union Pacific at the Golden Spike Ceremony. He was forced off the board in May 1869 and his health broke. He lost almost everything he owned in the Panic of 1873. He lived his later years in the Adirondacks and died there in 1885 neither rich nor famous.

The Ames brothers have also faded from general recognition. They thought they would make money and get great credit from their association with the UP but instead received censure as participants in the Crédit Mobilier scandal. The railroad did commission a famous architect, H. H. Richardson, to design a 65 feet high monument to the two men. It stands at Sherman Summit, right beside the grade that used to carry the tracks of the railroad, but because the road was relocated southward at the beginning of the 20th Century, the monument now stands isolated and alone today. The monument is located a mile or so from Interstate 80 coming out of Cheyenne and heading toward Ogden. It has its own exit on the highway with a sign but only a handful of hard-core railroad buffs go there.

The Central Pacific:

The Big Four: The Big Four were also railroad men in their own way and they managed to remain working for the railroad.

Leland Stanford stayed in the railroad business. With his great wealth he did other things like build extensive vineyards in Tehama County, California. He also had a large ranch called Palo Alto where he bred and ran fine racehorses. He is credited with raising the grade of California horses and his original methods of horse training have been widely adopted. He was elected governor of California in 1862 and then elected to the U.S. Senate where he remained until his death in 1893. Stanford is a name known to everybody today because he had the good sense to found a university. He founded it in 1885 and named it Leland Stanford Junior University after his son, who died in 1884 just two months before he turned 16. From then until its opening in 1891 he was active in setting the curriculum and picking the faculty and administration for what became one of America's and the world's finest institutions. Because of the university, not because of the Central Pacific, Southern Pacific, governorship or long time in the Senate, Stanford's name is remembered today.

Collis Huntington remained a railroad king, as the CP expanded nationally and as it formed the SP. He tried to sell the CP in 1873 for \$20 million but was turned down. He continued running the system and remained at the head for decades. He became very outspoken against any government regulation and ran the CP and SP like a medieval king. His largest investment outside of the SP was the Chesapeake & Ohio Railroad. He founded the town of Newport News, Virginia, built a mansion on Nob Hill in San Francisco and bought another mansion on Fifth Avenue in New York. He died in 1900. Huntington is remembered primarily because of the town and beach named for him in California.

Charles Crocker kept to construction serving as the boss for the Southern Pacific Railroad of California. In 1884 he brought about the consolidation of the Central and Southern Pacific railroads and was involved in the construction of the California and Oregon Railroad from San Francisco north to Portland. He built a mansion in San Francisco said to have cost \$1.5 million and was a showplace of the city, but it was destroyed in the 1906 fire which followed the earthquake. Crocker died in 1888 with a fortune estimated at \$40 million. Crocker is generally unknown today.

Mark Hopkins is known for the hotel in San Francisco.

Conclusion: Stephen E. Ambrose said it well, "The dreamers, led by Judah; the politicians, led by Lincoln; the financiers, led by the congressmen and the Ames brothers, Durant, and Huntington; the surveyors, led by Dodge and Dey and Judah; the generals, led by Grant and Sherman; the engineers, led by Clement, Montague, Reed and others; the construction bosses, led by Strobridge and the Casement brothers; the railroad men; the foremen; the Chinese, the Irish, and all the others who picked up a shovel or a sledgehammer or a rail; and the American people who insisted that it had to be done and who paid for it, built the transcontinental railroad."

Short Stories About the Transcontinental Railroad

Where to Meet?

Congress had reserved the right to pick the spot where the two railroads would meet. It wanted the roads built as fast and as far as possible. The spot would be chosen after the grading crews had passed each other and as the rails at the end of track approached each other. Where that would be, no one knew.

In the first few months of 1869 both companies worked within sight of each other, often within a stone's throw. Between Bear River and Promontory the grading lines of the two companies were generally 500 feet to a quarter of a mile apart but at one point they were probably within 200 hundred feet. UP was close to the CP and crossed it twice with other grades running within a few feet of each other. On the rocky eastern slope of the Promontory Mountains, a large gang of Strobridge's Chinese were grading to the east, while Casement's graders were building to the west. They were frequently within a few feet of each other. They worked fast, hard, all day long even though it was obvious to them that one side or the other was wasting time, labor and supplies. A glaring reminder of the waste was the two grades running east and west from Promontory Summit, parallel to each other.

Resolution: Congress had watched as more than 200 miles of overlapping grade-work was being done. Not until April 10, 1869 did it step in to halt this. On April 9, 1869 Dodge met with Huntington in Washington. Both companies had reason to compromise at once. The two men agreed that the roads would meet in or near Ogden. That evening, in a night session, the Congress that had created the race to begin with, finally voted to end it. A joint resolution said, "The common terminus of the UP and the CP railroads shall be at or near Ogden, and the UPRR company shall build, and the CPRR Company shall pay for and own the railroad from the terminus aforesaid to Promontory Summit, at which the rails shall meet and connect and form one continuous line." The race was over. Who could say who won? Generally, the men involved breathed a sigh of relief.

These two grades paralleling each other can still be seen, often nearly touching, occasionally crossing. You can drive cautiously down from Promontory eastward on the surface of curving sections of the original but abandoned UP roadbed. You drive through high fills and long deep cuts. You can trace CP's lines too. Sometimes the two cross each other. Going west from Promontory Summit a car and a bike trail follow the original CP track with the UP grading always visible. These are stark mementos of human failure and achievement, monuments to government stupidity and genius, to the competitive instincts and organizing ability of Strobridge and the Big Four and Dodge, Durant and the other leaders of the UP and most of all to the men who built them.

Most Track Laid In One Day Race

In 1868 Jack Casement's UP men had laid down four and a half miles of track in a single day and bragged of it. It was heralded all over the country as being the biggest day's track-laying that was ever known. Crocker told Strobridge that the CP must beat the UP. They did and laid six

miles in a single day. Then UP came back with 8 miles in a day (starting at 3 a.m. and working until midnight). Now Crocker told Strobridge that the CP must beat the UP. They decided if they laid 10 miles in a day that would do it. They decided to wait until the UP only had 9 miles left to lay so they couldn't possibly beat them!

Crocker had planned for two weeks and come up with an ambitious plan. Strobridge listened to the plan and said "We can beat them, but it will cost something," like fresh teams of horses to take over after every two and a half miles. They decided to do it. They waited until April 27 when the CP had only 14 miles to go and the UP 9. Crocker offered a bet of \$10,000 to Durant saying the CP would lay 10 miles of track in one day, Durant was sure they couldn't do it and accepted the wager. On April 27 a CP locomotive ran off the track after only 2 miles of track was laid which forced postponement until the next day. It was embarrassing because the UP had its engineers there to watch along with some army officers and several newspaper correspondents. Crocker laughed it off. Before sunrise on April 28 a wagon load of UP officials arrived on the scene including Durant, Dodge, Reed and Seymour, they had come to watch Crocker's humiliation and laugh at him.

What the CP crews did that day will be remembered as long as the Republic lasts. White men born in America were there, plus emigrants from all across Europe, more than 3,000 Chinamen, some Mexicans, as well as French Indians and at least a few Native Americans. Everyone was excited, ready to work, eager to show what he could do. Work started at sunrise, which was 7:15. First the Chinese went to work, in 8 minutes 16 cars were cleared with a noise like the bombardment of an army. By 1:30 p.m. workers had laid 6 miles of track and christened the site Victory (later Rozel, Utah) because they knew they had won. A second team of track layers were in reserve but the proud men who had laid the first 6 miles before eating lunch insisted on keeping at it throughout the rest of the day and they did. By 7 p.m. the CP was 10 miles and 56 feet farther east than it had been at dawn. This had never been done before and was never matched. Each man among the Irish track-layers had lifted 125 tons of iron, that was 11.2 short tons per man per hour. They laid at a rate of approximately 240 feet every 75 seconds. There were many heroes that day: Crocker who had thought it up and planned it, Strobridge who organized everything, all the superintendents, foremen and the workers. The 8 Irishmen put down 3,520 rails and were paid four days wages. Others straightened or laid 25,800 ties. 28,160 spikes were put into place by the Chinese, the spikes weighed a total of 55,000 pounds. The bolt crews put in 14,080 bolts. To demonstrate how well the track was done engineer Jim Campbell ran a locomotive over the new track at 40 miles per hour.

1200 men piled onto 16 flatcars for the ride, smiling, cheering laughing, kicking their feet and swinging their arms, breaking into song and congratulating one another. They had done what no men before them had ever done, nor would any to come. Casement was not a good loser. He said his men could do better if they had enough room to do so and begged Durant for permission to tear up several miles of track in order to prove it. Durant said no. As far as can be told, Doc Durant never paid Crocker the \$10,000 he lost in the bet. (USHS web site "10 Miles Of Track, Laid In One Day sign")

One Last Race

It occurred to both Dodge (UP) and Crocker (CP) that if their railroad built a siding at Promontory Summit, it could claim terminal rights there. Crocker got all geared up and had a train loaded with the rails, ties, spikes, bolts and fishplates ready to go along with a Chinese crew to build the siding. His meticulous plan was to run up to the summit during the early hours of Monday morning, May 10, and go to work at first light. That way he could have the siding in place well before any ceremonies began. Dodge beat him. Dodge had talked to Jack Casement and had him start his gangs to work Sunday night and through the wee hours of Monday morning. Under the light of lanterns and the moon, the UP men had a complete siding and Y-track in place before the first light. Just as they finished, the CP construction train and crew arrived. Casement's men greeted them with a hoot, a holler and a laugh.

Spies and Secret Codes

Both companies were trying, with some success, to place "moles" or spies in each others railroad camps. The Union Pacific sent two engineers to Colfax to snoop around and see what they could pick up. The Crocker brothers knew about this effort and showed them around, filling their heads full of nonsense. They were told that tunnels were terribly long and progress was very slow and it would take a long time to blast through the granite. They went back to Omaha to report to Durant that there was nothing to worry about, the Central Pacific would be blasting away for years. They convinced Durant that it would take at least two more years to get through the Summit Tunnel. Crocker told Huntington, "While the engineers were here we led them to think that it would take us a long time to get over the mountain. We thought that Durant, while laboring under that idea, would not be apt to be in so great a hurry."

The CP was also planting spies on the UP. The CP spies had heard about the trouble with snow in the winter of 1866-67 and thought that the UP would only be able to work on construction during the summer months. The UP was winning the race at this time. Crocker got after Strobbridge and told him to hurry up.

The first use of secret codes by businessmen to prevent detection of their doings is thought to have been by the Central Pacific and Union Pacific. It was inaugurated in 1868, just as the race between the two corporations was headed toward a climax. The purpose was to baffle any wiretapper, a reasonable fear, since all a spy had to do to find out what the opposition was up to was tap into the telegraph line. The UP had a problem with one of its engineers writing to a CP engineer telling him all he knew about the UP's plans and progress. The CP's code consisted of symbolic words, "Yelp" was Brigham Young's code name. Mark Hopkins had one key to the code and was the only one of the Big Four who habitually used the code. The Big Four, especially Huntington and Hopkins, used codes to hide important numbers, like profits, costs and most of all totals. This may have been to hide the figures from the UP, but there was also a strong possibility that another purpose was to fool government regulators and inspectors, and it worked. In March of 1869 Hopkins sent a telegram to Huntington, "Roving Delia Fish Dance," which meant when it was decoded, "Laying track at the rate of 4 miles a day."

Snow Sheds

Snow troubles were a major expense. During the winter of 1866-67 and 1867-68 half and sometimes all of the labor force had to be used to shovel the snow. The winter of 1867-68 was one of the worst of the nineteenth century. Strobridge put hundreds of Chinese to work doing nothing but shoveling the snow away to keep open a cart trail to a tunnel opening. If it had not been for the race with the Union Pacific, the Central Pacific would have closed down that winter, but the fear of losing all Utah and Nevada to their rival drove them on. The Chinese laborers dug snow tunnels from 50 to 500 hundred feet long to get to the granite tunnels. Some were large enough for a team of horses to walk through. Windows were dug out of the snow walls to dump refuse and let in some light. They also built chimneys and air shafts. There was a constant threat of avalanches. Clement sent men hauling black-powder kegs to reach threatening combs of great masses of compact snow leaning over the granite bluffs.

Stanford and Crocker made a costly but necessary decision in 1867. They decided to cover the track with snow sheds in the most vulnerable places because it was impossible to keep the road clear from snow or open over half the time. It was also very expensive to clear the snow because the only way they could do it was with men and shovels, which required an army of men on hand all the time, at great expense.

Lewis Clement designed the snow sheds. In the summer of 1867 Arthur Brown, superintendent of the bridges, got started and built about 5 miles of experimental sheds. In June 1868 when some of the snow had melted or been removed, permanent construction began. Brown had 2500 men working for him. He kept six trains constantly busy bringing timber, spikes and bolts. He kept every sawmill in the Sierra busy and used 65 million feet of timber and 900 tons of bolts and spikes. Workers were paid top rates, \$4 per day for carpenters and \$2.50 to \$3 for common laborers. The total length of the sheds was 37 miles. The job wasn't completely finished until 1869. Other railroads around the world later copied the idea, most notably in the Alps.

It was an engineering feat of the first magnitude, "The Longest House in the World." The biggest snow shed ran 29 miles, had 100 million board feet of lumber and withstood the Sierra snowfalls, where one season 65 feet of snow piled up. They were one of the wonders of engineering with wood. The sheds remain one of the wonders of the Central Pacific. (USHS web site "Snow Sheds")

Black Powder vs. "Nitro Glycerin"

At the tunnels the Chinese were using great amounts of black powder, up to 500 kegs a day. Despite the end of the Civil War, the price of black powder had gone up steadily from \$2.50 per keg to \$15 per keg. Crocker and Strobridge decided to experiment with "nitro glycerin" which was brand-new (and spelled as two words). Said to be an extraordinary explosive it had been invented in Italy in 1847 and refined in 1860s by demolitions engineer Alfred Nobel (who the Nobel Peace Prize was named after). It was 5 times more powerful by bulk than black powder and 13 times more destructive. There were terrible accidents, ignored for the most part by the Central Pacific, but nevertheless more than enough to force most companies to swear it off. The CP found that when they got drilling holes of 15 to 18 inches into granite, poured in the liquid

nitro glycerin, capped the hole with a plug and fired it with a percussion cap, the nitro glycerin did a far better job than black powder. The work progressed at nearly double the speed and the granite was broken into far smaller pieces. But the accidents proved to be too much. In one accident, a Chinese worker hit a charge of nitro glycerin that hadn't exploded with his pick. It exploded and killed him and the others working near the spot. Strobbridge declared, "Bury that stuff." and Crocker said to get it out of there. Alfred Nobel perfected dynamite in 1866 but it was never tested or used by the CP.

Biggest Scandal of the 19th Century

Crédit Mobilier: this corporation was comprised of 91 individuals including 7 who were in Congress including Grenville Dodge and Oakes Ames. It paid nearly 300% cash in dividends on invested capital in just one year - but couldn't pay what it owed to its workers. For the Union Pacific and its construction company the Crédit Mobilier trouble was big. Charles Francis Adams, Jr. (grandson and great-grandson of U.S. presidents) printed an article in the respected *North American Review* calling the Crédit Mobilier another name for the "Pacific Railroad Ring." He charged that the members are in Congress, trustees for the bondholders, directors, stockholders and contractors; in Washington they vote the subsidies; in New York they receive them; upon the plains they expend them; and in the Crédit Mobilier they divide them. The fact that money flowed from the UP to Crédit Mobilier and they didn't use the money to pay the contractors, subcontractors or laborers was disturbing. Another disturbing fact was the money was enriching a relatively few already wealthy men who milked the corporation, the government and ultimately the people. Adams was not the only one ready to launch an assault on Crédit Mobilier. On September 4, 1872 the *New York Sun* newspaper launched what became the biggest scandal of the 19th Century. This scandal would scar the UP through the remainder of both the 19th and 20th centuries. The House of Representatives had a series of hearings to inquire into the workings of the Crédit Mobilier, the UP and the CP. Every official from these companies was required to testify. In virtually every case the testimony was twisted and given the worst possible interpretation.

The hearings were a big hit. People couldn't get enough of it. Papers everywhere ran summaries of the testimonies. This went on for six months and was sensationalized, although most charges were true and would be proven. The UP and CP were the biggest corporations of their time and the first to have extensive dealings with the federal, state, county and township governments. These companies could not have been built without government aid in the form of gifts, especially the land grants plus state and county purchases of their stock and the loans in the form of national government bonds. At the CP the "Big Four" became extraordinarily rich thanks to the way the railroad was financed. They spent their fortunes lavishly to the point that they became the very model of conspicuous consumption. The men who held stock in the Crédit Mobilier also got rich from it. In large part this was done by defrauding the government and the public, by paying the lowest possible wages to the men who built the lines and by delaying or actually ignoring payments of bills to the subcontractors and workmen. In many ways they used their power to guarantee profits for themselves. Most Americans found it difficult, even impossible to believe that they had actually earned those profits. There were cries of outrage, Americans felt they had been bilked. People were ashamed of their congressmen who had been complicit. Americans were furious at the revelations by investigative reporters and politicians of

the amount of corruption that had characterized the building of the UP and by the amount of lying and dissembling by those who testified.

After six months of hearings the Congress established that Oakes Ames had distributed and used as payoffs quite a lot of Crédit Mobilier stock, had lied to Congress about why he had passed out that stock, and that Crédit Mobilier had paid astonishing sums as dividends. Congress also established that the UP was so broke it could barely keep functioning and that the UP directors had a hard time explaining what happened to all the money UP took in from its own and government bonds. Because of all the attention of the hearings, the House had to do something. It passed two meek resolutions of censure: one against Oakes Ames and one against Representative James Brooks. The shame of the resolution was given as the major reason of Oakes Ames death on May 8, 1873. Brooks had died a week earlier. The Central Pacific, or Contract and Finance Company, was also investigated by Congress, but all its books had been burned – whether deliberately or by accident was and is in dispute – so nothing was pinned on the Big Four, even though they were as vulnerable as the UP.

The corruption that was rife in the building of the railroads was widespread. The railroads also enjoyed a monopoly that allowed them to charge what most users came to regard as inflated rates. There was a great deal of shoddy construction that had to be replaced. Collis Huntington had lied and probably used bribes and certainly had drawn a fictitious map to get revisions highly favorable to the CP in the Pacific Railroad Act.

Money owed

After the rails were joined, the Union Pacific's financial problems continued to grow. Aside from resources Durant had siphoned off, contractors had stolen much material that the UP had paid for, or at least signed for. Among the many creditors was Brigham Young, who bombarded the company headquarters in Boston with demands for payment in full. The UP had no money, but it did have equipment left over. Young was desperate to have a branch line, to be owned and controlled by the Mormons, running from Ogden to Salt Lake City. Finally, in September 1869 a deal was made. The UP gave the Mormons 4,000 tons of iron rail (\$480,000), 144 tons of spikes (\$20,000), 32 tons of bolts (\$5,600), 4 first-class passenger cars (\$5,000 each), second-class cars, mail cars, flatcars and boxcars. The total value that Young signed for was \$599,460. The Mormons got started on their railroad immediately and had it in service in a few months.

Misconceptions

Misconception #1: That both companies stretched out the lines in order to get more land grants, a notion that is completely wrong. Despite 130 years of working to reduce the length of the lines, only a few miles have been shaved off and that was mainly caused by the fall of the level of the Great Salt Lake, which allowed the railroad to make a shortcut below Promontory Summit by erecting a causeway through the water.

Misconception #2: That government bonds went only to the CP and UP. Not true. Government bonds also went to six companies chartered to build the second, third and so on Pacific railroads. It has been said that these were a gift, but they were not a gift, they were a loans to be paid back

in 30 years or less. The requirements were met. In the final settlement with the railroads in 1898 and 1899, the government collected \$63,023,512 of the principal plus \$104,722,978 in interest, making a total repayment of \$167,746,490 on an initial loan of \$64,623,512. For the government the whole outcome was a great financial success.

Misconception #3: That Brigham Young did not support the transcontinental railroad. Not true. From the first he had been an enthusiastic promoter. Widespread rumor by non-Mormons said otherwise. Non-Mormons thought that Young's opposition to commercial intercourse with outsiders, along with his disapproval of efforts to mine precious metals in Utah, made him a railroad opponent. That was the opposite of the truth. In 1852 Young had signed a memorial to Congress asking for a transcontinental railroad. In a December 1853 letter to Congress he remarked of the prospective road, "Pass where it will, we cannot fail to be benefited by it." He later told Dodge he would do whatever he could to help the railroad. Young believed the railroad would benefit Utah by getting converted immigrants to Salt Lake City faster and cheaper, import bulky manufactured goods at less cost, ship agricultural products to market, make it possible for Utah residents to visit family and friends back east and hoped that Salt Lake City would become a major tourist center. This hope was realized. In the first summer of regular service, more visitors stopped at Salt Lake City during the travel months than at any time since its founding.

Utah's Commemorative Quarter

On May 10, 2006 at Promontory Summit, 137 years after the original Golden Spike Ceremony, Governor Jon Huntsman unveiled the peoples choice for the design on the back of the Utah Quarter: Crossroads of the West, the Driving of the Golden Spike. In 1869 with the driving of the golden spike and the completion of the transcontinental railroad Utah became the "Crossroads of the West."

The United States Mint will produce 450 million Utah quarters beginning in January 2007. 99% of those will circulate outside Utah. During a 25-day online poll, more than 135,000 votes were cast for the quarter design: 52% for the Golden Spike, 27% for the Beehive and 21% for Winter Sports. (USHS web site "Utah's Commemorative Quarter")

Railroad Trivia

Time Zones: all times were local until the four Standard Time zones were adopted in 1878. The railroads demanded it for uniformity was critical for their operations. Before Standard Time was created to keep train schedules, clock readings varied as much as 30 minutes between cities in the same state.

The transcontinental railroad workers were organized as a military manner with squads, platoons, companies, battalions, regiments, divisions, with separate commanders and staffs for logistics, planning, intelligence, finance, personnel, and more.

Andrew Jackson became the first President of the United States to ride a train on June 6, 1833. He rode on the Baltimore and Ohio Railroad (the “B and O Railroad” on the Monopoly board).

First use of secret codes by businessmen to prevent detection of their doings is thought to have been by the Central Pacific and Union Pacific. It was inaugurated in 1868, just as the race between the two corporations was headed toward a climax. The purpose was to baffle any wiretapper, a reasonable fear, since all a spy had to do was find out what the opposition was up to and tap into the telegraph line. The UP had a problem with one of its engineers writing to a CP engineer telling him all he knew about the UP’s plans and progress. The CP’s code consisted of symbolic words, “Yelp” was Brigham Young’s code name. Mark Hopkins had one key to the code and was the only one of the Big Four who habitually used the code. The Big Four, especially Huntington and Hopkins, used codes to hide important numbers, like profits, costs and most of all totals. This may have been to hide the figures from the UP, but there was also a strong possibility that another purpose was to fool government regulators and inspectors, and it worked.

Brigham Young was the biggest buyer of the first open stock subscriptions available to 34 cities and the only one to pay in full for his five shares, which made him the UP’s first and for a long time only stockholder “in good standing.”

The original railroad tracks at Promontory of the Central Pacific and Union Pacific were pulled up for World War II salvage efforts in 1942. The salvaged rails were received by the U.S. Navy and relaid at a naval base in Hawthorne, Nevada and at the Utah Quartermaster Depot at Ogden, which furnished much needed wartime railroad tracks. There was a ceremony for the “Undriving of the Golden Spike” September 8, 1942 attended by many dignitaries, including Mrs. Mary Ipsen who was the only person at this ceremony who was also at the original ceremony in 1869. She was 12 years old at the original ceremony. (USHS web site “Undriving of the Golden Spike Ceremony” “Undriven Golden Spike” and “Dignitaries, Guests and Mrs. Mary Ipsen”)

The United States maintains the greatest amount of railroad track, approximately 315,200 kilometers. Russia is second with 166,500 kilometers. There are about 1,216 kilometers of track worldwide.